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EXAMINER

FINEMAN, LEE A

ART UNIT PAPER NUMBER

2872

DATE MAILED: 05/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/812,690

Applicant(s)

TAMURA ET AL. ✓

Examiner

Lee Fineman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-9 and 11-36 is/are pending in the application.
- 4a) Of the above claim(s) 17-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-9, 12-33, 35 and 36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 7-9 and 11-36 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to an amendment filed 10 April 03 in paper number 11 in which claims 7-8 were amended, claims 12-36 were added and claims 1-4 and 6 were cancelled. Claims 7-9 and 11-36 are pending.

Election/Restrictions

1. Newly submitted claims 17-27 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

- I. Claims 7-9, 12-16 and 28-36, drawn to a microscope system with specifics on optical elements and the image-forming lens, classified in class 359, subclass 385.
- II. Claims 17-27, drawn to a microscope system with specifics on an elongated illuminator, classified in class 359, subclass 385.

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, the claims of Invention I evidence that the combination does not rely on the details of Invention II for patentability and the claims of Invention II evidence that the combination does not rely on the details of Invention I for patentability. See MPEP § 806.05(d).

3. These inventions are distinct for the reasons given above. Further, the search required for Groups I and II is not coextensive and these inventions have acquired a separate status in the art

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because of their recognized divergent subject matter. Therefore, restriction for examination purposes as indicated is proper.

4. Since applicant has received an action on the merits for the originally presented Invention I, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17-27 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Objections

5. Claims 8, 12-16 are objected to because of the following informalities:

In claim 8, lines 9-10, "said total" lacks antecedent basis.

In claim 12, line 10, "said lens-barrel" lacks antecedent basis. Further, claim 12 states the limitation "an image-forming lens for focusing observation light" in line 3 and the limitation "an image-forming lens for said laser beam" in line 25. While these limitations are defined, the examiner suggests adding --first-- and --second-- to the limitations to help prevent confusion.

In claim 16, line 2, "the first image-forming lens" and "the second reflected illuminator" lack antecedent basis.

In claim 36, "said first optical element" (lines 6-7) and "said second optical element" (line 11) lack antecedent basis.

The dependent claims inherit the deficiencies of the claims from which they depend.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 7, 8, 15 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 7 and 8, the limitation of the second optical element being in the moving mechanism with the third optical element conflicts with the limitation of the second optical element in independent claim 12. The second optical element in independent claim 12 has the limitation of being "disposed in an observation optical path along the optical axis of said objective lens, for directing said excitation light from the first light source to the sample, and for transmitting observation light from the sample" which is not in the same position in the system as the optical elements that are moved. Therefore it is unclear which optical element the second optical element represents in the system. For the purposes of examination and as claim 16 further limits the second optical element's position as the non-moving element, the examiner takes the position that the second optical element listed in claims 7 and 8 should be the first optical element. Further, the distance Y as defined in claim 8 cannot be determined as the limitation "said total" is not defined.

Regarding claim 15, the limitations "a lens barrel" and "a reflecting mirror" are confusing in so far as it is unclear whether these are the same lens barrel and reflecting mirror already claimed or different additional elements. For the purposes of examination, they will be treated as the same elements included in the independent claim.

Regarding claim 36, the limitation “a second light source” is unclear as it is the only light source limitation included in the claim. Is another light source required? Secondly, the limitations of “first optical element” and “second optical element” are confusing because they lack antecedent basis, which makes it unclear what these terms reference, and further generates the question of whether the “optical element” is different from these first and second elements and therefore a third element or actually one of the first or second elements.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawano et al., U.S Patent No. 5,808,791.

Regarding claim 33, Kawano et al. discloses a microscope (fig. 2) comprising an objective lens (11); an ocular lens (22) provided in an observation optical path of the objective lens (fig. 2); a first optical element (16a) for directing light reflected from a sample (9) away from the optical observation path in a direction other than the ocular lens (17a); a second optical element (16c) for directing light reflected from the sample along the observation optical path towards the ocular lens (fig. 2); and a moving mechanism (18) on which the first optical element and the second optical element are provided, the moving mechanism places either the first

optical element or second optical element in the observation optical path at any one time (column 6, lines 18-27).

Regarding claim 34, Kawano et al. further discloses wherein the first optical element (16a) and the second optical element (16c) are separated by more than half the diameter of the observation light bundle (the length of element 16b is more than half the diameter of light bundle).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 12-13, 15, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Otaki, et al., Japanese Patent Application Publication No. 08-234110 and DeSimone, U.S. Patent No. 5,933,274.

Kawano et al. further discloses an inverted microscope (fig. 2) comprising the objective lens disposed below the sample (fig. 2); an image-forming lens (15) for focusing observation light from said objective lens, said image-forming lens imaging said observation light at a focal plane; a reflecting mirror (20) for directing transmitted light passing through said image-forming lens to a front side of the microscope (right side of fig. 1) on which a lens-barrel is disposed (not numbered, around 21 and 22); a first optical element (16) disposed between said image-forming lens and said reflecting mirror, for directing light from said image-forming lens to form an

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imaging optical path (17a); a port in said microscope, said imaging optical path passing through said port (column 16, lines 12-13); an imaging device (column 15, line 57) coupled to said port, said imaging device having an image plane substantially corresponding to the focal plane of the image-forming lens (fig. 2); a first light source (14), located on said backside, for emitting excitation light to illuminate the sample via said objective lens; a second optical element (12), a fluorescent cube, disposed in an observation optical path along the optical axis of said objective lens, for directing said excitation light from the first light source to the sample, and for transmitting observation light from the sample (fig. 2). Kawano et al. discloses the claimed invention except for the imaging path being on a backside of the microscope, which backside is the opposite side of the front side of the microscope; a second light source for emitting a laser beam incident on the sample via said objective lens; a third optical element disposed in said observation optical path behind said first optical element, for directing said laser beam from said second light source to the sample, and for transmitting said observation light from the sample and directing said observation light to said first optical element; an image-forming lens for said laser beam disposed between said second light source and said second optical element, for focusing said laser beam on the sample; and a lens holder for supporting said image-forming lens for said laser beam to enable movement of said image-forming lens for said laser beam in a direction of an optical axis of said laser beam, said lens holder adjusting a position of said image-forming lens for said laser beam so that said laser beam is focused on an appropriate position for said objective lens.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the position of the image-taking port to the backside, since it

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has been held that a mere rearrangement of an element without modification of the operation of the device involves only routine skill in the art. One would have been motivated to rearrange the position of image-taking port for the purpose of reducing the width of the microscope. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

Otaki, et al. teaches an inverted microscope (fig. 1) comprising an objective lens (2) under a sample (1); a first light source (11) for emitting excitation light to illuminate the sample, fluorescent cube (DM1); a second light source (14) for emitting a laser beam incident on the sample via said objective lens; an optical element (DM2) disposed in said observation optical path, for directing said laser beam from said second light source to the sample, and for transmitting said observation light from the sample and directing said observation light to said another optical element (15) towards an imaging port. It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the second laser light source and the optical element (DM2), as a third optical element, to the system of Kawano et al. to provide a more flexible system with another viewing mode.

DeSimone teaches a microscope (figs. 3a and 3b) with an objective lens (138), a first light source (165, column, 11, line 52) for emitting excitation light to illuminate the sample (161) via the objective lens, a second light source (155) for emitting a laser beam to illuminate the sample via the objective lens, an image-forming lens (20A, 20B) for focusing the laser beam, and a lens holder (76) for supporting the image-forming lens for the laser beam which enables moving the image-forming lens for the laser beam in a direction of an optical axis of the laser beam for focusing the laser beam (column 4, lines 25-28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to add the image-forming lens

and lens holder of DeSimone to the laser light source in the system of Kawano et al. and Otaki et al. to provide better focusing of the laser beam. Therefore the image-forming lens for said laser beam would be disposed between said second light source and said second optical element, for focusing said laser beam on the sample.

12. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above, and further in view of Jörgens, U.S. Patent No. 5,535,052.

Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above, discloses the claimed invention except for a first reflected illuminator coupled to the light source, for directing the light from the first light source, a relay tube coupled to the first reflected illuminator, having a mirror inside for deflecting light emitted from the light source and passed through the first reflected illuminator, and a second reflected illuminator coupled to the relay tube for directing light deflected on the mirror in the relay tube to inside of the microscope. Jörgens teaches an inverted microscope (fig. 2) wherein the image-taking port (37, 40, 46, 47) and the light being directed to it being on the backside of the microscope (fig. 2, right side), which backside is the opposite side of the front side of the microscope (fig. 2, left side) on which the lens-barrel (not numbered) is disposed and a light source (31), a first reflected illuminator (surrounding element 32) coupled to the light source, for directing the light from the light source, a relay tube coupled to the first reflected illuminator (surrounding element 33), having a mirror (33) inside for deflecting light emitted from the light source and passed through the first illuminator, and a second reflected illuminator (surrounding elements 34, 35, 36) coupled to the

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relay tube for directing light deflected on the mirror in the relay tube to inside of the microscope. It would have been obvious to one having ordinary skill in the art at the time the invention was made use a first reflected illuminator, a relay tube with mirror, and a second reflected illuminator and have them located on the backside of the microscope (as well as the image-taking port) as suggested by Jörgens in the system of Kawano et al. in view of Otaki et al. and DeSimone to make the system more compact.

13. Claims 7, 9, 28-32, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above, and further in view of Takeuchi, U.S. Patent No. 6,337,767 B1.

Regarding claim 9, Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above further discloses a first optical element (12, Kawano) disposed in an observation optical path along the optical axis of said objective lens, for directing said excitation light from the first light source to the sample, and for transmitting observation light from the sample; a second optical element (DM2; Otaki) disposed in said observation optical path behind said first optical element, for directing said laser beam from said second light source to the sample, and for transmitting said observation light from the sample; a third optical element (16; Kawano or 15; Otaki) for directing light passed through the second optical element to an imaging optical path.

Regarding claims 28-32, Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above further discloses an ocular lens (22; Kawano) provided in the observation path of the objective lens; a laser (14; Otaki) for emitting a laser beam; a first optical element (DM2; Otaki), a dichroic mirror, for directing the laser beam toward a sample along the observation

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optical path; a second optical element (16; Kawano), which is a semi-transparent prism (and therefore reflects light and is a mirror), for directing the light reflected from the sample away from the optical observation path in a direction other than the ocular lens.

Regarding claim 35, Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above further discloses a laser (14; Otaki) for emitting a laser beam; a third optical element (DM2) for directing the laser beam toward the sample along the observation optical path.

Kawano et al. in view of Otaki et al. and DeSimone as applied to claim 12 above, discloses the claimed invention except for the moving mechanism moving the optical element for directing the laser beam from laser light source (second element in claim 9; third element in claims 7, 8 and 35; first element in claim 28) and the optical element for directing light from the sample away from the observation beam path (third element in claim 9; first element in claims 7, 8, 33 and 35; second element in claim 28) out of the beam path at the same time; or the moving mechanism placing either the optical element which provides excitation light to the observation beam path (second element in claim 35) or the optical element for directing light from the sample away from the observation beam path (third element in claim 9; first element in claims 7, 8, 33 and 35; second element in claim 28) and the optical element for directing the laser beam from laser light source (second element in claim 9; third element in claims 7, 8 and 35; second element in claim 28) in the observation optical path at any one time.

Takeuchi teaches a microscope (fig. 5(a)) with two light sources (55 and 156), optical element (154), which directs light from a second light source (156) to and from the sample and away from the observation beam path (to detector 53) and a moving mechanism for moving the

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optical element (154) out of the beam path (column 9, lines 63-67) while moving in an optical element (110) for directing the other light source into the observation beam path (column 7, lines 57-63). It would have been obvious to one having ordinary skill in the art at the time the invention was made modify the moving mechanism of Kawano et al. in view of Otaki et al. and DeSimone, as suggested by Takeuchi, to include the optical element for directing the laser beam from laser light source (a second light source) in the moving mechanism as well as move it together with the optical element for directing light from the sample away from the observation beam path so that they are not in the beam path at the same time as the optical element which provides excitation light to the observation beam path for the purpose of prevent mixing of the light sources providing better images of the specimen in each view (column 10, lines 7-14).

Allowable Subject Matter

14. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claim 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action (i.e. amended to be similar in scope to allowable claim 11) and to include all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter

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Claim 11 is allowable over the prior art for at least the reason that the prior art fails to teach and/or suggest an inverted microscope with "the distance Y which is the distance between said total reflection prism and said total transmission prism is set to be longer than a half of the diameter X which is the maximum diameter of a light flux of said observation optical path" as set forth in the claimed combination.

The combination of Kawano et al., Otaki et al, and DeSimone disclose an inverted microscope with light sources, optical elements, and a moving mechanism for changing the light path, but does not teach or suggest having a total reflection prism and a total transmission prism with a distance Y which is the distance between said total reflection prism and said total transmission prism set to be longer than a half of the diameter X which is the maximum diameter of a light flux of said observation optical path as claimed.

Response to Arguments

17. Applicant's arguments with respect to claims 7-8, 12-16, and 28-36 have been considered but are moot in view of the new ground(s) of rejection.

18. After careful review of the claims, it is found that an obvious rejection is appropriate for claim 9. The examiner regrets any inconvenience caused by this action.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lee Fineman whose telephone number is (703) 305-5414. The examiner can normally be reached on Monday - Friday 7:30 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

LAF

LAF
May 1, 2003

Mark A. Robinson
MARK A. ROBINSON
PRIMARY EXAMINER